

ABSTRACT

A system for expressing a heterologous gene in a cell type-specific and inducible manner features at least one vector that includes a nucleic acid encoding a switch/biosensor, a 5 nucleic acid encoding a tissue-specific promoter, a nucleic acid encoding the heterologous gene, and a nucleic acid encoding a gene amplification component. The switch/biosensor allows the system to regulate expression of the heterologous gene in response to a stimulus. The tissue-specific promoter allows the system to selectively express the heterologous gene in a particular cell or tissue type. And the gene amplification component induces expression 10 of the heterologous gene at a level sufficient to exert a physiological effect on a tissue administered the system.